

## CLAIMS.

1. A viral DNA construct encoding for an adenovirus capable of replication in a human or animal tumor cell comprising one or more selected transcription factor binding sites operatively positioned together with the E1A open reading frame such as to promote expression of E1A proteins in the presence of said selected transcription factor, wherein the level or activity of the transcription factor is increased in a human or animal tumor cell relative to that of a normal human or animal cell of the same type; and wherein the viral DNA construct further comprises a therapeutic gene.
2. A viral construct as claimed in claim 1 wherein the therapeutic gene is a suicide gene positioned between the fibre gene and the E4 region in the major late transcription unit of the viral construct.
3. A viral construct as claimed in claim 1 wherein the construct encodes a full complement of adenoviral proteins.
4. A viral construct as claimed in claim 1 wherein the wild type packaging signal is deleted from its wild type site adjacent the left hand inverted terminal repeat (ITR) and inserted elsewhere in the construct, in either forward or backward orientation.
5. A viral construct as claimed in claim 2 wherein the suicide gene is selected from HSV thymidine kinase, nitroreductase and cytosine deaminase.
6. A viral construct as claimed in claim 1 or claim 2 wherein the therapeutic gene is expressed late in a replication-dependent manner using an IRES or by differential splicing.
7. A viral construct according to claim 1 wherein the selected transcription factor binding site is a Tcf-4 transcription factor binding site.

8. A viral construct as claimed in claim 1 wherein the E4 promoter contains part of the E1A enhancer of the packaging signal flanked by Tcf and E4F sites.
- 5 9. A virus comprising or encoded by the DNA construct as claimed in any preceding claim.
- 10 10. A method for treating a patient in need of therapy for a neoplasm wherein a viral DNA construct as claimed any one of claims 1 to 8 is caused to infect tissues of the patient, including or restricted to those of the neoplasm, and allowed to replicate such that neoplasm cells are caused to be killed.
11. A method as claimed in claim 10 characterised in that the patient is in need of therapy for a colon cell derived tumor.
- 15 12. A viral DNA construct encoding for an adenovirus capable of replication in a human or animal tumor cell comprising one or more selected tumor specific transcription factor binding sites replacing one of more wild type transcription factor binding sites in the viral promoter sequences such as to control expression of viral genes, wherein the level or activity of the tumor specific transcription factor is increased in a human or animal tumor cell relative to that of a normal human or animal cell of the same type; and a therapeutic gene; and wherein the viral construct encodes a full complement of wild type genes.
- 20 13. A viral construct as claimed in claim 12 wherein the selected transcription factor binding sites are operatively positioned together with the E1A open reading frame such as to promote expression of E1A proteins in the presence of said selected transcription factor.
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14. A viral construct as claimed in claim 12 wherein the wild type packaging signal is deleted from its wild type site adjacent the left hand inverted terminal repeat (ITR) and inserted elsewhere in the construct, in either forward or backward orientation.
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15. A viral construct as claimed in claim 12 wherein the selected transcription factor binding sites are single or multiple Tcf-4 binding sites.
16. A viral construct as claimed in claim 12 wherein the therapeutic gene is expressed in a replication-dependent manner from the major late transcription unit.
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17. A virus comprising or encoded by the DNA construct as claimed in any one of claims 12 to 16.
18. A method for treating a patient in need of therapy for a neoplasm wherein a viral DNA construct as claimed any one of claims 12 to 16 is caused to infect tissues of the patient, including or restricted to those of the neoplasm, and allowed to replicate such that neoplasm cells are caused to be killed.
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19. A method as claimed in claim 18 characterised in that the patient is in need of therapy for a colon cell derived tumor.
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20. A viral DNA construct encoding for an adenovirus capable of replication in a human or animal tumor cell comprising one or more selected transcription factor binding sites operatively positioned together with one or more of the E1B, E2 and E3 open reading frames such as to promote expression of one or more E1B, E2 and E3 proteins in the presence of said selected transcription factor, wherein the level or activity of the transcription factor is increased in a human or animal tumor cell relative to that of a normal human or animal cell of the same type; and a therapeutic gene.
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21. A viral construct according to claim 20 wherein the selected transcription factor binding sites are selected from Tcf-4, RBPJ $\kappa$ , Gli-1, HIF1alpha and telomerase promoter binding sites.

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22. A viral construct according to claim 20 wherein the therapeutic gene is a suicide gene expressed in a replication-dependent manner.

23. A viral construct as claimed in claim 20 wherein the therapeutic gene is positioned between the fibre gene and E4 in the major late transcription unit.

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24. A viral construct as claimed in claim 20 wherein one or more of the selected transcription factor binding sites are inserted into the right hand terminal repeat such as to provide sufficient symmetry to allow it to base pair to the left hand ITR during replication.

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25. A viral construct as claimed in claim 20 wherein the viral construct encodes a full complement of adenoviral proteins.

26. A virus comprising or encoded by the DNA construct as claimed in any one of claims 20 to 25.

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27. A method for treating a patient in need of therapy for a neoplasm wherein a viral DNA construct as claimed any one of claims 20 to 25 is caused to infect tissues of the patient, including or restricted to those of the neoplasm, and allowed to replicate such that neoplasm cells are caused to be killed.

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28. A method as claimed in Claim 27 characterised in that the patient is in need of therapy for a colon cell derived tumor.

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29. A method of producing a viral DNA construct encoding for an adenovirus capable of selective replication in a human or animal tumor cell comprising removal of regions comprising one or more wild type transcription factor binding sites from one or more viral promoters and replacement of said regions with one or more tumor specific transcription factor binding sites, wherein the replacement with tumor specific transcription factor provides spare packaging capacity in the viral construct; inserting a therapeutic gene; and retaining a full complement of wild type viral genes in the construct.
30. A method as claimed in claim 29 wherein the therapeutic gene is a suicide gene.
31. A method as claimed in claim 30 wherein the suicide gene is inserted between the fibre gene and the E4 region.

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